

it all! Before you went to Illinois to live you were in the penitentiary in South Carolina! But you escaped, and nobody ever found out anything about it! You—"

For the lightning flash of a second some of the rugged strength went out of the Congressman's face; but he interrupted her in a voice that was still vibrant, still kindly, as she had always known it.

"My dear Miss Hopper, what are you talking about?" "You were twenty-two then," she rushed on, her hands outstretched at her sides, palms against the wood of the door, "and you're forty-one now. So that was a

long time ago. And your provocation for the assault was great—oh, so great! And you didn't mean to kill Tom Wright. You just meant to stop him. But you escaped from the prison, and you haven't served out your time. And—"

The look of surprised pain in his face stopped her. She stepped toward the desk, her body leaning forward, her great eyes searching him.

"Oh, Sir," she said, brokenly, "then it isn't true?" "You—" All of a sudden she realized the enormity of

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MOVING PICTURES OLDER THAN PHOTOGRAPHY

By F. IRVING ANDERSON

It seems rather odd to ascribe the birth of the science of photography to moving pictures, when the motion pictures as we find them on every street corner today are possible only through photography; yet such is the fact. Moving pictures are older than photography, and, what is more, were responsible in the beginning for the discovery of photography.

The progenitor of our modern moving pictures was the diorama, a trick mechanical spectacle devised by Daguerre and Bouton in Paris in 1822, and hailed by the fun-loving populace with all the enthusiasm of a new toy. The diorama consisted of a series of paintings on gauze, arranged on a succession of "drops" in much the same manner that the modern scenic artist uses to stage a spectacle, such as Little Eva floating among the clouds, as the goodnight skyrocket in modernized Uncle Tom; but the original dioramists went farther. They showed the scenes in a darkened auditorium, and produced their effects by varying the direction, intensity, and color of lights.

For instance, with a bunch of oil lamps (the spotlight of that day) suddenly glaring forth from the right wing, the spectacle presented to the startled audience was of the beautiful heroine languishing in her chamber window high above the rocky precipice. When the audience had its fill of the weeping, lonely lady, the stage electrician, or whatever he might have been called in those days, suddenly shifted the lights to the left entrance, and, behold! on the face of the rocky gorge there suddenly appeared our hero, knife in teeth, rope slung about his body, bent mightily on the rescue of his fair one. Then, blink! and out puffed the left wing lights; and the oil tapers above and behind the proscenium arch suddenly changed the romantic scene. Now appeared the irate father, with a handful of his rascals at his back, and on his face written as plainly as in a printed book the words, "Ha! Percy, I have ye in my grasp!"

And so, on and on, ran the melodrama. Occasionally, to get the desired effect, the stage mechanics had to halt the play long enough to withdraw one piece of gauze and substitute another. The whole scheme was simply an arrangement of light and shadow in blocks, much like the grating signs with which all are familiar today, which read one thing when approached and another thing when looked at from another direction. Crude as the diorama seems in these days of the real motion pictures, yet the inventors were skilful enough to stage thrillers that caught the town by the ears. In fact, so much of an institution did the diorama of Daguerre become that it became the fashion for students and the boardinghouse wits of the day to scatter the syllables "orama" about in their speech. Balzac's *Père Goriot* is written about this period, and in the airy perillage of the dingy boardinghouse of that story a corpse became the corpse-orama, a joke was always a joke-orama. We had the same thing here during the Russo-Japanese War, when the newspaper-reading public, getting its first lessons in Slav, affixed "catch" to any noun that would serve as a handle. In 1904 every joke was a joke-ovitch.

Daguerre and Bouton maintained a water-tight monopoly of their new thriller, and it saved the industry of the former pretty hard to keep up with the demand for scenery of this trick order. When he exhausted the list of classical subjects, he hit upon the scheme of using the camera obscura to provide him scenes. The camera obscura, decreed in the sixteenth century, was a box containing a lens and a sheet of oiled paper in lieu of ground glass. It was, in fact, a modern camera without a plate holder. Daguerre, with his box under his arm, strolled the fields and woodlands, and, when he came to a likely view on which to stage a forth-

coming thriller he would aim his box at it, and sketch the image thrown on the oiled paper upside down.

He was the original moving picture man, because, when he watched the sheep and cattle and people upside down, running across his oiled paper screen, he dreamed of the day when some miracle would enable him to throw these images direct on the curtain in his diorama, and give his audience the real thing.

He confided his dream to Niepce, a chemist. Niepce saw the possibilities of it, and they formed a partnership. Niepce had heard that asphaltum captured images of light and shade, and he began experimenting. One day he turned up with the first photographic plate of history. It was a silver plate coated with asphaltum and oil of lavender, and after about a year of hard work Daguerre reported progress. It was wonderful, too; for he had been able to produce a shadowy something that took on the appearance of a landscape, by exposing the plate in his camera obscura the short space of seven hours. He could cut this time in half for a picture of a white marble monument which caught and reflected more light. That was the first snapshot.

Niepce and Daguerre went different ways after this achievement. Daguerre still painting night and day from his camera obscura for his precious diorama theater. He fell more and more in love with the beautiful images reflected on the oiled screen of his camera. One day he heard of Sir Humphry Davy and his experiments with silver. Chlorides and iodides of silver, said the great scientist, were affected by light as no other metal salts. In this hint Daguerre saw the fulfillment of his dream. He began to experiment again. He fumed silver plates with iodine, in a dark box, and put these plates in his camera obscura.

But nothing came. He could leave them there for hours or days; but he got nothing on the plate but the same sickly yellow that the fumes of iodine had set there originally. Still he kept at it, scraping his plates clean after each failure, to try again. One day he didn't have time to clean a plate, and he set it aside in a closet. Two or three days later he opened the closet and took out the plate. What was his amazement and consternation to find there a wonderful picture, the picture of his dreams. It was a beautiful landscape of limpid water and crisp foliage and soft clouds. This first daguerreotype was perfect, they say. One can easily picture the thrifty, ambitious scene painter and his emotions as it burst on his view.

Then he woke up! He had this beautiful picture, true; but he hadn't the least idea in the world why this one picture was a success and the others failures. He had put them all through the same process, and out of a hundred this one suddenly appeared, with lips closed as tightly as a sphinx, to drive him half mad with its riddle. He called in his friends and put the question to them, under oath of secrecy. One of them guessed one thing, another guessed something else. In the closet stood a little bowl of mercury. Daguerre

noticed this, and an idea came to him. He said nothing about it; but he experimented. There was the secret! The vapor of the mercury had developed the latent image! Daguerre didn't know it, but he had secured his picture probably in everyone of his hundred experiments; but he lacked the secret of the developer. Chemical action was necessary to bring the picture forth to view.

There we have the beginning of photography; born of, not for, moving pictures.

THIS first picture died an early death. When it was brought to the light, it folded its tent like the Arab and as silently faded away. Daguerre held the most beautiful, the most sensational, thing in the world in his hand for a few minutes, and then it became an ugly, blackened plate. He tried all sorts of things to "fix" his next pictures. Common salt in water proved to be the most likely that he hit on; but the science of photography as Daguerre discovered it never amounted to much until Herschel the astronomer suggested "hypo," and since that suggestion photographers have never found anything better.

It is interesting to trace the stages of the science following Daguerre's accidental discovery when looking for an easy way to provide scenery for his moving picture emporium. The French nation hugged the scene painter to its bosom. The wonderful discovery was chronicled far and wide, and the French Chamber of Deputies met and voted the inventor a life pension of six thousand francs, and his collaborator, Isidore Niepce, son of Daguerre's first partner, four thousand francs, on condition that the discovery be published and not patented. Daguerre cannily slipped across to England and patented the process there. In some large towns in England as much as one thousand pounds was paid for the exclusive right to use the process; so Daguerre profited beyond the dreams of his now forgotten diorama.

Arago, his friend, brought the discovery before the Academy of Sciences in Paris in 1839, and the action of the French Government followed immediately. Arago addressed the Chamber of Deputies, saying:

"It requires no knowledge of drawing, and does not depend on manual dexterity. The promptitude of the method is perhaps that which has most astonished the public. In reality, ten or twelve minutes in the dull weather of winter are amply sufficient for taking a view of a monument, a section of a town or a landscape. In summertime this may be reduced one-half. Under the skies of the south not more than two or three minutes will be necessary."

Arago went on to say that to this time must be added the time spent in packing and unpacking the camera, and in the manipulations necessary to develop and fix the picture.

"Those persons are deceived, then," he warned the Deputies, "who suppose that during a journey they may avail themselves of brief intervals while the carriage slowly mounts a hill, to take views of the country."

PHOTOGRAPHY today, with the aid of the so called focal plane shutter, takes pictures in as little as one five-thousandth of a second, and passengers are not hard put to it in the matter of time when they seek to catch views of the country while the postilion is pushing his tired steeds up a hill. However, it has been a long, hard road that makes the moving picture of today possible. By the way, the discovery of Daguerre put the good old diorama so far in the background of public interest that it died a natural death, and never profited by the birth of its brilliant child.

The first step toward the millenium in photography was the substitution of bromide for iodine in "picking" the silver plate. This reduced the time of exposure to something like ten seconds. Then came portraiture. But, even at that, only one picture could be made at a time, and no duplicates printed from it.

All the time the diorama scene painter was working in secret there was an Englishman, Fox Talbot, quietly nursing along the germ of discovery. He had no more knowledge of chemistry than had Daguerre. And he was working on another tack. He was coating paper with salts of silver and exposing it in a camera, to make negatives; and, like Daguerre, he got nothing but trouble out of his pains until he too became a victim of a divine "accident." One day he happened to drop one of his no-account paper "negatives" on some nut galls, and when he picked it up again there was a perfect picture! That is the origin of the photographic negative, and the introduction of gallic acid in the science of photography. From which, "pyro."

It was a bitter pill for Talbot when Daguerre's process was announced, and to this day the English people name Talbot as the real pioneer of photography.

Then came the introduction of collodion, requiring ten seconds' exposure; then of gelatin emulsion; then the gelatin emulsion of today. A treatise on photography as late as 1890 points to the achievement of fifty years, of a perfect picture in one-fiftieth of a second. Compare that with the latest moving picture machine, which can take as many as one thousand pictures of the same object with the same camera in the space of a single second!

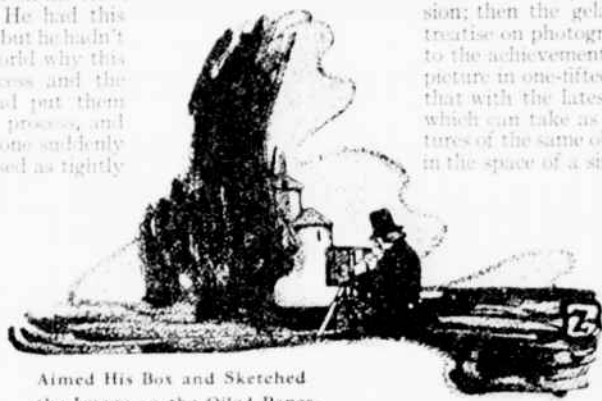
But don't forget, when you think the science of photography for the moving pictures of this day and date, to remember the old diorama, to remember that that crude progenitor of the moving picture was, in reality, the father of photography.



Louis Jacques Mandé Daguerre.



Joseph Nicéphore Niepce. Partner of Daguerre.



Aimed His Box and Sketched the Image on the Oiled Paper.